

SEQUENCE LISTING

<110> CHONNAM NATIONAL UNIVERSITY et al.

<120> MUCOSAL VACCINE ADJUVANTS CONTAINING BACTERIAL FLAGELLINS AS AN ACTIVE COMPONENT

<130> Q95704

<150> KR 10-2004-0001974

<151> 2004-01-12

<160> 18

<170> KopatentIn 1.71

<210> 1

<211> 1131

<212> DNA

<213> Vibrio vulnificus

<400> 1

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| gccgctgaag gtcaacaaaa atcaatggag cgtttgtctt cgggctataa aatcaatagc | 120 |
| gcgaaagatg atgctgcagg tctacaaatt tctaaccgtt tgaactcgca aagccgtggg | 180 |
| ctcgacatgg cggttaaaaa tgccaacgat ggtatctcta ttgcacagac tgctgaaggt | 240 |
| gcaatgacag agaccaccaa catcctacaa cgtatgcgtg accttgcctt gcaatcgtct | 300 |
| aacggttcga actctcgctt tgaacgcgtg gcgattcaag aagaagtgtc agcgttgaac | 360 |
| caagaactta accgtatcgc agagacaacc tcttttggtg gtaacaaact ccttaacggt | 420 |
| acgtacgggt ctcaatcttt ccaaactcgt gctgactctg gtgaagctgt gatgctttct | 480 |
| atgggtaacc ttcgttcaga tacagacgcg atgggaggct tgagctacaa atctgaagaa | 540 |
| ggcgtaggcg cagattggcg tgtaagcgac aacactgact tcacgatgtc ttatgtgaat | 600 |
| aagcaagggt aagaaaaaga gatcacagtc aacgccaaag cgggtgacga tcttgaagaa | 660 |
| ctggcgactt acatcaacgg tcaaaacgat gatgtgaaag cgtcggtcgg tgaaggcggc | 720 |
| aaactgcagc tattcgcttc taaccaacgt gtagaagggt aagtggaatt cggtggtggt | 780 |
| ctagcgtctg agttgaacat tggatgagc accaaaaacca atgtgagcaa cattgatgtc | 840 |
| acgacgggtg ctggctctca agaagcagta gcgatcatt atggcgcat gaaatcggt | 900 |
| gacagtgagc gtgcctctct aggtgcattt caaaaccggt tcaaccatgc aatcagcaac | 960 |
| ctaagcaaca tcaatgagaa cgtaaacgct tcgagcagcc gtatcaagga taccgactac | 1020 |
| gcgaaagaaa cgactcagat gactaagacg caaattctgc agcaggcgag tacttctatc | 1080 |
| ctggcgagc cgaagcagtc accatctgca gctcttagct tggtaggcta a | 1131 |

<210> 2
 <211> 376
 <212> PRT
 <213> *Vibrio vulnificus*

<400> 2
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 Tyr Leu Asn Gln Ala Ala Glu Gly Gln Gln Lys Ser Met Glu Arg Leu
 20 25 30
 Ser Ser Gly Tyr Lys Ile Asn Ser Ala Lys Asp Asp Ala Ala Gly Leu
 35 40 45
 Gln Ile Ser Asn Arg Leu Asn Ser Gln Ser Arg Gly Leu Asp Met Ala
 50 55 60
 Val Lys Asn Ala Asn Asp Gly Ile Ser Ile Ala Gln Thr Ala Glu Gly
 65 70 75 80
 Ala Met Thr Glu Thr Thr Asn Ile Leu Gln Arg Met Arg Asp Leu Ala
 85 90 95
 Leu Gln Ser Ser Asn Gly Ser Asn Ser Arg Ser Glu Arg Val Ala Ile
 100 105 110
 Gln Glu Glu Val Ser Ala Leu Asn Gln Glu Leu Asn Arg Ile Ala Glu
 115 120 125
 Thr Thr Ser Phe Gly Gly Asn Lys Leu Leu Asn Gly Thr Tyr Gly Ser
 130 135 140
 Gln Ser Phe Gln Ile Gly Ala Asp Ser Gly Glu Ala Val Met Leu Ser
 145 150 155 160
 Met Gly Asn Leu Arg Ser Asp Thr Asp Ala Met Gly Gly Leu Ser Tyr
 165 170 175
 Lys Ser Glu Glu Gly Val Gly Ala Asp Trp Arg Val Ser Asp Asn Thr
 180 185 190
 Asp Phe Thr Met Ser Tyr Val Asn Lys Gln Gly Glu Glu Lys Glu Ile
 195 200 205
 Thr Val Asn Ala Lys Ala Gly Asp Asp Leu Glu Glu Leu Ala Thr Tyr
 210 215 220
 Ile Asn Gly Gln Asn Asp Asp Val Lys Ala Ser Val Gly Glu Gly Gly
 225 230 235 240
 Lys Leu Gln Leu Phe Ala Ser Asn Gln Arg Val Glu Gly Glu Val Glu
 245 250 255
 Phe Gly Gly Gly Leu Ala Ser Glu Leu Asn Ile Gly Asp Gly Thr Lys
 260 265 270
 Thr Asn Val Ser Asn Ile Asp Val Thr Thr Val Ala Gly Ser Gln Glu
 275 280 285

Ala Val Ala Ile Ile Asp Gly Ala Leu Lys Ser Val Asp Ser Glu Arg
 290 295 300

Ala Ser Leu Gly Ala Phe Gln Asn Arg Phe Asn His Ala Ile Ser Asn
 305 310 315 320

Leu Ser Asn Ile Asn Glu Asn Val Asn Ala Ser Ser Ser Arg Ile Lys
 325 330 335

Asp Thr Asp Tyr Ala Lys Glu Thr Thr Gln Met Thr Lys Thr Gln Ile
 340 345 350

Leu Gln Gln Ala Ser Thr Ser Ile Leu Ala Gln Ala Lys Gln Ser Pro
 355 360 365

Ser Ala Ala Leu Ser Leu Leu Gly
 370 375

<210> 3
 <211> 1133
 <212> DNA
 <213> *Vibrio vulnificus*

<400> 3
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 gcaaacagcg cacaacaaac ttcgatggag cgtctgtctt caggtttcaa aatcaacagt 120
 gcaaaagatg acgcagccgg tctgcaaатc tctaaccgct tgaacgtaca aagtcgсggt 180
 ctagacgttg cggtagctaa cgccaacgac ggtatctcaa tcgcacaaac cgcagaaggt 240
 gcgatgaacg agaccaccaa catcctacaa cgtatgcgtg acctatctct acaatccgсg 300
 aacggctcaa actcaaaatc agagcgсgtg gcgattcaag aagaagtгac agcattgaat 360
 gacgagctaa accgtattgc agaaaccacg tcttttggtg gtaacaagct gctaaacggt 420
 acttacggca cgaaagcaat gcaaattggt gcggataacg gtgaagcggt catgctttca 480
 ctgaaagaca tgcgctctga caacgtgatg atgggcggcg tgagctacca agctgaagaa 540
 ggcaaagaca agaactggaa tgtggccgca ggcgacaacg acttgacgat tgcactgaca 600
 gacagctttg gtaacgagca agagatcgaa atcaacgcga aagcgгgtga tgacatcgaa 660
 gagctagcga cgtacatcaa cggтcaaaact gaccttgtaa aagcgтcagt gggтgaaggc 720
 ggcaagctac agatctttgc tggtaacaac aaagtтcaag gtgaaattgc tttctcaggt 780
 agcctagctg gtgaacttgg cctaggcgaa ggcaaaaacg tcacggtaga cacgattgac 840
 gtgacaaccg tacaaggтgс gcaagagтcг gtagcgattg tggatgcggc actgaaatac 900
 gtagacagcc accgtгcaga gctgggtгca ttccagaacc gttтcaacca tgcaatcagc 960
 aacttgгaca acatcaacga aaacgtgaac gcгтcgaaga gccgaatcaa agataccgac 1020

ttcgcgaaaag aaacgactca gttgaccaag acacaaattc tatcgcaagc atcaagttcc 1080
attcttgctgc aagcgaaaaca agcgccaaac tcagcgctaa gtctactagg cta 1133

<210> 4
<211> 375
<212> PRT
<213> *Vibrio vulnificus*

<400> 4
Met Ala Val Asn Val Asn Thr Asn Val Ala Ala Met Thr Ala Gln Arg
1 5 10 15
Tyr Leu Asn Asn Ala Asn Ser Ala Gln Gln Thr Ser Met Glu Arg Leu
20 25 30
Ser Ser Gly Phe Lys Ile Asn Ser Ala Lys Asp Asp Ala Ala Gly Leu
35 40 45
Gln Ile Ser Asn Arg Leu Asn Val Gln Ser Arg Gly Leu Asp Val Ala
50 55 60
Val Arg Asn Ala Asn Asp Gly Ile Ser Ile Ala Gln Thr Ala Glu Gly
65 70 75 80
Ala Met Asn Glu Thr Thr Asn Ile Leu Gln Arg Met Arg Asp Leu Ser
85 90 95
Leu Gln Ser Ala Asn Gly Ser Asn Ser Lys Ser Glu Arg Val Ala Ile
100 105 110
Gln Glu Glu Val Thr Ala Leu Asn Asp Glu Leu Asn Arg Ile Ala Glu
115 120 125
Thr Thr Ser Phe Gly Gly Asn Lys Leu Leu Asn Gly Thr Tyr Gly Thr
130 135 140
Lys Ala Met Gln Ile Gly Ala Asp Asn Gly Glu Ala Val Met Leu Ser
145 150 155 160
Leu Lys Asp Met Arg Ser Asp Asn Val Met Met Gly Gly Val Ser Tyr
165 170 175
Gln Ala Glu Glu Gly Lys Asp Lys Asn Trp Asn Val Ala Ala Gly Asp
180 185 190
Asn Asp Leu Thr Ile Ala Leu Thr Asp Ser Phe Gly Asn Glu Gln Glu
195 200 205
Ile Glu Ile Asn Ala Lys Ala Gly Asp Asp Ile Glu Glu Leu Ala Thr
210 215 220
Tyr Ile Asn Gly Gln Thr Asp Leu Val Lys Ala Ser Val Gly Glu Gly
225 230 235 240
Gly Lys Leu Gln Ile Phe Ala Gly Asn Asn Lys Val Gln Gly Glu Ile
245 250 255
Ala Phe Ser Gly Ser Leu Ala Gly Glu Leu Gly Leu Gly Glu Gly Lys

| | | |
|---|-----|-----|
| 260 | 265 | 270 |
| Asn Val Thr Val Asp Thr Ile Asp Val Thr Thr Val Gln Gly Ala Gln | | |
| 275 | 280 | 285 |
| Glu Ser Val Ala Ile Val Asp Ala Ala Leu Lys Tyr Val Asp Ser His | | |
| 290 | 295 | 300 |
| Arg Ala Glu Leu Gly Ala Phe Gln Asn Arg Phe Asn His Ala Ile Ser | | |
| 305 | 310 | 315 |
| Asn Leu Asp Asn Ile Asn Glu Asn Val Asn Ala Ser Lys Ser Arg Ile | | |
| 325 | 330 | 335 |
| Lys Asp Thr Asp Phe Ala Lys Glu Thr Thr Gln Leu Thr Lys Thr Gln | | |
| 340 | 345 | 350 |
| Ile Leu Ser Gln Ala Ser Ser Ser Ile Leu Ala Gln Ala Lys Gln Ala | | |
| 355 | 360 | 365 |
| Pro Asn Ser Ala Leu Ser Leu | | |
| 370 | 375 | |

<210> 5
 <211> 1133
 <212> DNA
 <213> *Vibrio vulnificus*

| | |
|---|-----|
| <400> 5 | |
| gtggcgatca ccgttaatac caatgtggca gcacttgtcg cacagcgtca tttgaccagt | 60 |
| gcaaccgaca tgctgaatca atccttggag cgtttgcctt caggaagcg tattaatagt | 120 |
| gcaaaagacg atgcggcagg gctgcaaatt tcgaatcgtc ttcagtcgca aatgcgtggt | 180 |
| ttagatatcg cggtgcgaaa tgccaatgat ggcattctcca ttatgcagac tgcggaagg | 240 |
| gcaatgaatg aaaccactaa tattctccaa aggatgcgtg atctttcatt gcaatccgcc | 300 |
| aatggttcca atagctatgc tgaaagaata gccttacaag aagaaatgac cgcgttaaat | 360 |
| gacgagttga accgtatcgc agaaaccacc tcgttcggtg ggcgtaaatt gctcaatggt | 420 |
| tcctttggct cggctgcctt tcagataggg gcagcgtcag gtgaagcggg gcaagtgcaa | 480 |
| ctgaagtcga tgcgcagtga tggattgat atgggtggct tcagttacat tgcaaacgga | 540 |
| cggtcccgtt ctgattggca agtaaaagag ggggcgaatg cgcttagcat gtcattcacg | 600 |
| aatcgttttg gtgaaacaga aacgatccaa attaatgcga aagccggcga tgatatcgaa | 660 |
| gagcttgcca cctacattaa tggtcagact gacaaagtca cggcatcggg gaatgaagaa | 720 |
| ggtcagctac agttgtttat ggccggcgaa gaaacctcag gaacgttatc gttttcagga | 780 |
| gacttagcca gtgaactcgg tttgcaacta aaaggttacg atgcggtgga taatatcgac | 840 |
| attacttctg tcggtggcgc tcaacaagca gtggctgtcc ttgataccgc gatgaaatac | 900 |

gtcgatagtc atcgtgctga gctaggggca tatcaaaacc gcttcagcca tgcgattaat 960
aacctcgaca acatccacga aaacttggcg acatcaaaca gtcgcattca agatacagac 1020
tatgcgaagg aaaccacgcg catggtcaaa caacagatcc tacagcaagt cagtacttct 1080
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<210> 6
<211> 375
<212> PRT
<213> *Vibrio vulnificus*

<400> 6
Val Ala Ile Thr Val Asn Thr Asn Val Ala Ala Leu Val Ala Gln Arg
1 5 10 15
His Leu Thr Ser Ala Thr Asp Met Leu Asn Gln Ser Leu Glu Arg Leu
20 25 30
Ser Ser Gly Lys Arg Ile Asn Ser Ala Lys Asp Asp Ala Ala Gly Leu
35 40 45
Gln Ile Ser Asn Arg Leu Gln Ser Gln Met Arg Gly Leu Asp Ile Ala
50 55 60
Val Arg Asn Ala Asn Asp Gly Ile Ser Ile Met Gln Thr Ala Glu Gly
65 70 75 80
Ala Met Asn Glu Thr Thr Asn Ile Leu Gln Arg Met Arg Asp Leu Ser
85 90 95
Leu Gln Ser Ala Asn Gly Ser Asn Ser Tyr Ala Glu Arg Ile Ala Leu
100 105 110
Gln Glu Glu Met Thr Ala Leu Asn Asp Glu Leu Asn Arg Ile Ala Glu
115 120 125
Thr Thr Ser Phe Gly Gly Arg Lys Leu Leu Asn Gly Ser Phe Gly Ser
130 135 140
Ala Ala Phe Gln Ile Gly Ala Ala Ser Gly Glu Ala Val Gln Val Gln
145 150 155 160
Leu Lys Ser Met Arg Ser Asp Gly Ile Asp Met Gly Gly Phe Ser Tyr
165 170 175
Ile Ala Asn Gly Arg Ala Arg Ser Asp Trp Gln Val Lys Glu Gly Ala
180 185 190
Asn Ala Leu Ser Met Ser Phe Thr Asn Arg Phe Gly Glu Thr Glu Thr
195 200 205
Ile Gln Ile Asn Ala Lys Ala Gly Asp Asp Ile Glu Glu Leu Ala Thr
210 215 220
Tyr Ile Asn Gly Gln Thr Asp Lys Val Thr Ala Ser Val Asn Glu Glu
225 230 235 240

gatatctcga tttcgggtag ccttgcctct gaactgggtt tgagtgcga accgattgcg 840
 acaacagtac aagatttggga tctgcgtacc gtacaagggt ctcagaacgc aattagcgtt 900
 attgacgcgg cattgaagta cgttgattca caacgtgcgg acttaggtgc aaaacagaac 960
 cgtttaagcc acagtattaa taacttggcg aacgttcaag aaaacgttga tgcacgaac 1020
 agccgtatta aagatactga ttttgcgaag gaaacgacgc aaatgacgaa agcacagatt 1080
 ttgcaacagg caggctacttc tattcttgct caagcaaaac aattgccaaa ctctgcaatg 1140
 tcactattgc agggctaa 1158

<210> 8
 <211> 383
 <212> PRT
 <213> *Vibrio vulnificus*

<400> 8
 Met Ala Val Thr Val Ser Thr Asn Val Ser Ala Met Thr Ala Gln Arg
 1 5 10 15
 Tyr Leu Asn Lys Ala Thr Asp Glu Leu Asn Thr Ser Met Glu Arg Leu
 20 25 30
 Ser Ser Gly His Lys Ile Asn Ser Ala Lys Asp Asp Ala Ala Gly Leu
 35 40 45
 Gln Ile Ser Asn Arg Leu Thr Ala Gln Ser Arg Gly Leu Asp Val Ala
 50 55 60
 Met Arg Asn Ala Asn Asp Gly Ile Ser Ile Ala Gln Thr Ala Glu Gly
 65 70 75 80
 Ala Met Asn Glu Ala Thr Ala Val Leu Gln Arg Met Arg Asp Leu Ser
 85 90 95
 Ile Gln Ser Ala Asn Gly Thr Asn Ser Thr Ser Glu Arg Gln Ala Ile
 100 105 110
 His Glu Glu Ala Ser Ala Leu Gln Asp Glu Ile Asn Arg Ile Ala Glu
 115 120 125
 Thr Thr Ser Phe Gly Gly Arg Arg Leu Leu Asn Gly Thr Phe Gly Asp
 130 135 140
 Ala Ala Phe Gln Ile Gly Ser Asn Ser Gly Glu Ala Met Ile Met Gly
 145 150 155 160
 Leu Thr Ser Ile Arg Ala Asp Asp Phe Arg Met Gly Gly Thr Thr Phe
 165 170 175
 Gln Ser Glu Asn Gly Lys Asn Lys Asp Trp Glu Val Ser Ala Asp Asn
 180 185 190
 Ala Glu Leu Asn Ile Val Leu Pro Glu Met Gly Glu Asp Glu Asp Gly
 195 200 205

Asn Val Ile Asp Leu Glu Ile Asn Ile Met Ala Lys Ser Gly Asp Asp
 210 215 220
 Ile Glu Glu Leu Ala Thr Tyr Ile Asn Gly Gln Ser Asp Tyr Ile Asn
 225 230 235 240
 Ala Ser Val Ser Glu Asp Gly Lys Leu Gln Ile Phe Val Ala Gln Pro
 245 250 255
 Asn Val Lys Gly Asp Ile Ser Ile Ser Gly Ser Leu Ala Ser Glu Leu
 260 265 270
 Gly Leu Ser Asp Glu Pro Ile Ala Thr Thr Val Gln Asp Leu Asp Leu
 275 280 285
 Arg Thr Val Gln Gly Ser Gln Asn Ala Ile Ser Val Ile Asp Ala Ala
 290 295 300
 Leu Lys Tyr Val Asp Ser Gln Arg Ala Asp Leu Gly Ala Lys Gln Asn
 305 310 315 320
 Arg Leu Ser His Ser Ile Asn Asn Leu Ala Asn Val Gln Glu Asn Val
 325 330 335
 Asp Ala Ser Asn Ser Arg Ile Lys Asp Thr Asp Phe Ala Lys Glu Thr
 340 345 350
 Thr Gln Met Thr Lys Ala Gln Ile Leu Gln Gln Ala Gly Thr Ser Ile
 355 360 365
 Leu Ala Gln Ala Lys Gln Leu Pro Asn Ser Ala Met Ser Leu Leu
 370 375 380

<210> 9
 <211> 1134
 <212> DNA
 <213> *Vibrio vulnificus*

<400> 9
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 gcaaacagcg cacaacaaac ttcgatggag cgtctgtctt caggtttcaa aatcaacagt 120
 gcaaaagatg acgcagccgg tctgcaaatac tctaaccgct tgaacgtgca aagtcgcggt 180
 ctagacgttg cggtagctaa cgccaacgac ggtatctcaa tcgcacaaac cgcagaaggt 240
 gcgatgaacg agaccaccaa catcctacaa cgtatgcgtg acctatctct gcaatcagcg 300
 aacggctcaa actcaaaaatc agagcgcgtg gcgattcaag aagagatcac cgcattgaac 360
 gacgagctaa accgtatcgc agaaaccacg tcttttggtg gtaacaaact gctcaacggc 420
 acttacggca cgaaagcaat gcaaattggt gcggataacg gtgaagcggc catgctgtca 480
 ctcaaagaca tgcgctctga caacgtgatg atgggcggcg tgagctacca agctgaagaa 540

ggcaaagaca agaactggaa tgtggccgca ggcgacaacg acttgacgat tgcactgaca 600
 gacagctttg gtaacgagca agagatcgaa atcaacgcga aagcgggcca tgacatcgaa 660
 gagctagcga cgtacatcaa cgggtcaaact gaccttgtaa aagcgtcagt ggggtgaaggc 720
 ggcaagctac agatctttgc tggtaacaac aaagttcaag gtgaaattgc tttctcaggt 780
 agcctagctg gtgaacttgg cctaggcgaa ggcaaaaacg tcacggtaga cacgattgac 840
 gtgacaaccg tacaaggtgc gcaagagtcg gtagcgattg tggatgcggc actgaaatac 900
 gtagacagcc accgtgcaga gctgggtgca ttccagaacc gtttcaacca tgcaatcagc 960
 aacttggaca acatcaacga gaacgtgaac gcgtcgaaga gccgaatcaa agataccgac 1020
 ttcgcgaaag aaacgactca gttgaccaag acacaaattc tatcgcaagc atcaagttcc 1080
 attcttgccg aagcgaaaca agcgccaaac tcagcgctaa gtctactagg ctaa 1134

<210> 10
 <211> 377
 <212> PRT
 <213> *Vibrio vulnificus*

<400> 10
 Met Ala Val Asn Val Asn Thr Asn Val Ala Ala Met Thr Ala Gln Arg
 1 5 10 15
 Tyr Leu Asn Asn Ala Asn Ser Ala Gln Gln Thr Ser Met Glu Arg Leu
 20 25 30
 Ser Ser Gly Phe Lys Ile Asn Ser Ala Lys Asp Asp Ala Ala Gly Leu
 35 40 45
 Gln Ile Ser Asn Arg Leu Asn Val Gln Ser Arg Gly Leu Asp Val Ala
 50 55 60
 Val Arg Asn Ala Asn Asp Gly Ile Ser Ile Ala Gln Thr Ala Glu Gly
 65 70 75 80
 Ala Met Asn Glu Thr Thr Asn Ile Leu Gln Arg Met Arg Asp Leu Ser
 85 90 95
 Leu Gln Ser Ala Asn Gly Ser Asn Ser Lys Ser Glu Arg Val Ala Ile
 100 105 110
 Gln Glu Glu Ile Thr Ala Leu Asn Asp Glu Leu Asn Arg Ile Ala Glu
 115 120 125
 Thr Thr Ser Phe Gly Gly Asn Lys Leu Leu Asn Gly Thr Tyr Gly Thr
 130 135 140
 Lys Ala Met Gln Ile Gly Ala Asp Asn Gly Glu Ala Val Met Leu Ser
 145 150 155 160
 Leu Lys Asp Met Arg Ser Asp Asn Val Met Met Gly Gly Val Ser Tyr
 165 170 175

Gln Ala Glu Glu Gly Lys Asp Lys Asn Trp Asn Val Ala Ala Gly Asp
 180 185 190
 Asn Asp Leu Thr Ile Ala Leu Thr Asp Ser Phe Gly Asn Glu Gln Glu
 195 200 205
 Ile Glu Ile Asn Ala Lys Ala Gly Asp Asp Ile Glu Glu Leu Ala Thr
 210 215 220
 Tyr Ile Asn Gly Gln Thr Asp Leu Val Lys Ala Ser Val Gly Glu Gly
 225 230 235 240
 Gly Lys Leu Gln Ile Phe Ala Gly Asn Asn Lys Val Gln Gly Glu Ile
 245 250 255
 Ala Phe Ser Gly Ser Leu Ala Gly Glu Leu Gly Leu Gly Glu Gly Lys
 260 265 270
 Asn Val Thr Val Asp Thr Ile Asp Val Thr Thr Val Gln Gly Ala Gln
 275 280 285
 Glu Ser Val Ala Ile Val Asp Ala Ala Leu Lys Tyr Val Asp Ser His
 290 295 300
 Arg Ala Glu Leu Gly Ala Phe Gln Asn Arg Phe Asn His Ala Ile Ser
 305 310 315 320
 Asn Leu Asp Asn Ile Asn Glu Asn Val Asn Ala Ser Lys Ser Arg Ile
 325 330 335
 Lys Asp Thr Asp Phe Ala Lys Glu Thr Thr Gln Leu Thr Lys Thr Gln
 340 345 350
 Ile Leu Ser Gln Ala Ser Ser Ser Ile Leu Ala Gln Ala Lys Gln Ala
 355 360 365
 Pro Asn Ser Ala Leu Ser Leu Leu Gly
 370 375

<210> 11
 <211> 1127
 <212> DNA
 <213> *Vibrio vulnificus*

<400> 11
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 gcaagtcagg tagctgaaac ccaaaaaaat ctaagttccg gattccgaat taatagtgcc 120
 agcgatgatg ccgctggaat gcagatagcg aatacgcttc acgtccaaac ccgtgggttg 180
 gatgtggcat taactaacgc tcatagtgtt tatgctgttg cagaaacagc ggaaggggagc 240
 ttggaagagg gcagtgaaat actgcagaga ttgcgatctc tttctcttca agccgcaaac 300
 ggatcgaatt ctgatgagga tcggc aaagt ttgcagttgg aagtgggtgg attgaaagat 360
 gaagtggaaa gaatagccag gacaaccaca tttgcgggta aaaatctgtt tgatggaagt 420

| | |
|--|------|
| tatggttcaa aaagttttca tcttggggca aattctaatt ccatttcttt gcaactcaaa | 480 |
| aacatgcgga ctcacgttcc tgagatgggc gggatcatt accttgctc ggagccagcg | 540 |
| gatgaggatt ggcaagttga caaggaatca aggcaactta gctttacttt tcgagatagc | 600 |
| gaaggggatg atcaatccat taagatctcg ctttaagcctg gagacagtct cgaagaagtc | 660 |
| gctacgtata tcaattcaca gcaaaatggt gtggagtcct cggtgacgga tgatcggcga | 720 |
| ttgcagtttt atgtcgctaa tcgtcacgct cctgatgggt taaatatctc aggaagcttg | 780 |
| gagggagagc tagactttga accgcaagga caagtgcgc tcgatgaact cgatatcagt | 840 |
| agtgtgggtg gtgctcaatt ggcgattgct gttgttgata ctgcaattca atatctggat | 900 |
| tctcaccgaa gtgaaatcgg cagttttcaa aatcgggtag aggggacgat ggacaatttg | 960 |
| caaagtatca atcgcaatgt cactgaatca aaagggcgaa tatgggatac cgattttgcg | 1020 |
| aaagcatcaa ccgctttagt gaagtctcag gtattgcaac aggctacctc tgccttgctg | 1080 |
| gctcaagcca agcaagcccc aggcagtgc attggattgc tatctta | 1127 |

<210> 12
 <211> 375
 <212> PRT
 <213> *Vibrio vulnificus*

| | |
|---|--|
| <400> 12 | |
| Met Val Ser Leu Asn Thr Asn Val Ser Ala Met Val Ala Gln Arg His | |
| 1 5 10 15 | |
| Leu Ser Thr Ala Ala Ser Gln Val Ala Glu Thr Gln Lys Asn Leu Ser | |
| 20 25 30 | |
| Ser Gly Phe Arg Ile Asn Ser Ala Ser Asp Asp Ala Ala Gly Met Gln | |
| 35 40 45 | |
| Ile Ala Asn Thr Leu His Val Gln Thr Arg Gly Leu Asp Val Ala Leu | |
| 50 55 60 | |
| Thr Asn Ala His Ser Ala Tyr Ala Val Ala Glu Thr Ala Glu Gly Ala | |
| 65 70 75 80 | |
| Leu Glu Glu Gly Ser Glu Ile Leu Gln Arg Leu Arg Ser Leu Ser Leu | |
| 85 90 95 | |
| Gln Ala Ala Asn Gly Ser Asn Ser Asp Glu Asp Arg Gln Ser Leu Gln | |
| 100 105 110 | |
| Leu Glu Val Val Val Leu Lys Asp Glu Val Glu Arg Ile Ala Arg Thr | |
| 115 120 125 | |
| Thr Thr Phe Ala Gly Lys Asn Leu Phe Asp Gly Ser Tyr Gly Ser Lys | |
| 130 135 140 | |
| Ser Phe His Leu Gly Ala Asn Ser Asn Ser Ile Ser Leu Gln Leu Lys | |
| 145 150 155 160 | |

Asn Met Arg Thr His Val Pro Glu Met Gly Gly Tyr His Tyr Leu Ala
 165 170 175
 Ser Glu Pro Ala Asp Glu Asp Trp Gln Val Asp Lys Glu Ser Arg Gln
 180 185 190
 Leu Ser Phe Thr Phe Arg Asp Ser Glu Gly Asp Asp Gln Ser Ile Lys
 195 200 205
 Ile Ser Leu Lys Pro Gly Asp Ser Leu Glu Glu Val Ala Thr Tyr Ile
 210 215 220
 Asn Ser Gln Gln Asn Val Val Glu Ser Ser Val Thr Asp Asp Arg Arg
 225 230 235 240
 Leu Gln Phe Tyr Val Ala Asn Arg His Ala Pro Asp Gly Leu Asn Ile
 245 250 255
 Ser Gly Ser Leu Glu Gly Glu Leu Asp Phe Glu Pro Gln Gly Gln Val
 260 265 270
 Thr Leu Asp Glu Leu Asp Ile Ser Ser Val Gly Gly Ala Gln Leu Ala
 275 280 285
 Ile Ala Val Val Asp Thr Ala Ile Gln Tyr Leu Asp Ser His Arg Ser
 290 295 300
 Glu Ile Gly Ser Phe Gln Asn Arg Val Glu Gly Thr Met Asp Asn Leu
 305 310 315 320
 Gln Ser Ile Asn Arg Asn Val Thr Glu Ser Lys Gly Arg Ile Trp Asp
 325 330 335
 Thr Asp Phe Ala Lys Ala Ser Thr Ala Leu Val Lys Ser Gln Val Leu
 340 345 350
 Gln Gln Ala Thr Ser Ala Leu Leu Ala Gln Ala Lys Gln Ala Pro Gly
 355 360 365
 Ser Ala Ile Gly Leu Leu Ser
 370 375

<210> 13
 <211> 36
 <212> DNA
 <213> Artificial Sequence

<220>
 <221> misc_feature
 <222> 21..30
 <223> arbitrary primer 1; n may be a, t, g or c.

<400> 13
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36

<210> 14

<211> 25
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> specific primer 1

 <400> 14
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 <210> 15
 <211> 20
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> arbitrary primer 2

 <400> 15
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 <210> 16
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 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> specific primer 2

 <400> 16
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 <210> 17
 <211> 864
 <212> DNA
 <213> *Listeria monocytogenes* flaA

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 gatgacgctg ctggtcttgc agttgttact cgtatgaacg ttaaatctac aggcttagat 180
 gcagcaagca aaaactcatc catgggtatt gacttggtac aaacagcgga ttcagctctt 240
 agtccatga gttcaatctt gcaacgtatg cgtcaattag cagtacaatc ttctaacggt 300
 tcattcagtg acgaagatcg taaacaatac actgctgaat tcggtagctt gatcaaagaa 360
 cttgatcacg ttgtgacac tactaactac aacaacatca aattactaga tcaaactgct 420
 acaggtgctg ctactcaagt aagcatccaa gcgtctgata aagctaataa cttaatcaat 480

| | |
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| atcgatcttt tcaatgcgaa aggtctttct gctggaacaa tcactttagg tagtggttct | 540 |
| acagttgctg gttatagtgc attatctgtt gctgatgctg attcttctca agaagcaacg | 600 |
| gaagctattg atgaattaat caataacatc tctaacggtc gtgcacttct aggtgctggt | 660 |
| atgagtcgcc ttagctacaa tgtatctaac gtgaacaacc aatccatcgc aactaaagca | 720 |
| tctgcttcct ctattgaaga tgcagatatg gctgctgaaa tgtccgaaat gactaaatac | 780 |
| aaaattctta cacaaacatc tatcagcatg ctttctcaag caaaccaaac accgcaaatg | 840 |
| ttaactcaat taattaacag ctaa | 864 |

<210> 18
 <211> 1488
 <212> DNA
 <213> Salmonella typhimurium fliC

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| gcgaaagacg atgcggcagg tcaggcgatt gctaaccgtt ttaccgcgaa catcaaaggt | 180 |
| ctgactcagg cttcccgtaa cgctaacgac ggtatctcca ttgcgcagac cactgaaggc | 240 |
| gcgctgaacg aaatcaacaa caacctgcag cgtgtgcgtg aactggcggc tcagtctgct | 300 |
| aacagcacca actcccagtc tgacctcgac tccatccagg ctgaaatcac ccagcgccctg | 360 |
| aacgaaatcg accgtgtatc cggccagact cagttcaacg gcgtgaaagt cctggcgcag | 420 |
| gacaacaccc tgaccatcca gggtgggtgcc aacgacggcg aaactatcga tatcgatctg | 480 |
| aagcagatca actctcagac cctgggtctg gatacgctga atgtgcaaca aaaatataag | 540 |
| gtcagcgata cggctgcaac tgttacagga tatgccgata ctacgattgc tttagacaat | 600 |
| agtactttta aagcctcggc tactgggtctt ggtgggtactg accagaaaat tgatggcgat | 660 |
| ttaaaatttg atgatacgac tggaaaatat tacgccaaag ttaccgttac ggggggaact | 720 |
| ggtaaagatg gctattatga agtttccgtt gataagacga acggtgaggt gactcttgct | 780 |
| ggcgggtgcga cttccccgct tacagggtgga ctacctgcga cagcaactga ggatgtgaaa | 840 |
| aatgtacaag ttgcaaagtc tgatttgaca gaggctaaag ccgcattgac agcagcaggt | 900 |
| gttaccggca cagcatctgt tggttaagatg tcttatactg ataataacgg taaaactatt | 960 |
| gatggtggtt tagcagttaa ggtaggcgat gattactatt ctgcaactca aaataaagat | 1020 |
| ggttccataa gtattaatac tacgaaatac actgcagatg acggtacatc caaaactgca | 1080 |
| ctaaacaaac tgggtggcgc agacggcaaa accgaagtgg tttctattgg tggtaaaact | 1140 |
| tacgctgcaa gtaaagccga aggtcacaac tttaaagcac agcctgatct ggcggaagcg | 1200 |

| | |
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| gctgctacaa ccaccgaaaa cccgctgcag aaaattgatg ctgctttggc acaggttgac | 1260 |
| acgttacgtt ctgacctggg tgcggtacag aaccgtttca actccgctat taccaacctg | 1320 |
| ggcaacaccg taaacaacct gacttctgcc cgtagccgta tcgaagattc cgactacgcg | 1380 |
| accgaagttt ccaacatgtc tcgcgcgcag attctgcagc aggccggtac ctccgttctg | 1440 |
| gcgcaggcga accaggttcc gcaaaacgtc ctctctttac tgcgttaa | 1488 |